SURREBUTTAL TESTIMONY OF

BRIAN HORII

ON BEHALF OF

THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF

DOCKET NO. 2021-88-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND OCCUPATION.

A. My name is Brian Horii. My business address is 44 Montgomery Street, San Francisco, California 94104. I am a Senior Partner with Energy and Environmental Economics, Inc. ("E3"). Founded in 1989, E3 is an energy consulting firm with expertise in helping utilities, regulators, policy makers, developers, and investors make the best strategic decisions possible as they implement new public policies, respond to technological advances, and address customers' shifting expectations.

Q. DID YOU FILE DIRECT TESTIMONY AND ONE (1) EXHIBIT RELATED TO THIS PROCEEDING?

A. Yes. I filed direct testimony and one (1) exhibit with the Public Service Commission of South Carolina ("Commission") on July 27, 2021.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. My surrebuttal testimony responds to the rebuttal testimonies by Dominion Energy South Carolina, Inc. ("DESC" or the "Company") witnesses Thomas E. Hanzlik and Eric H. Bell regarding 1-hour ahead forecasts, witness Daniel F. Kassis regarding maintaining the Variable Integration Charge ("VIC") subject to future true up, and witness James W. Neeley regarding the use of a 100 megawatt ("MW") capacity change assumption in the

calculation of the avoided capacity cost. I also briefly respond to Witness Bell regarding my recommended modifications to the Time of Use ("TOU") for non-solar generators on the PR-1 rate.

Q. WITNESS HANZLIK'S REBUTTAL (PAGE 23) ASSERTS THAT MORE ACCURATE FORECASTS WOULD NOT REDUCE THE NEED FOR RESERVES AND THAT 1-HOUR AHEAD FORECASTS WOULD BE USELESS IN PLANNING OPERATING RESERVES. WITNESS BELL'S REBUTTAL (PAGE 9) ALSO ASSERTS THAT "ANY REDUCTION IN OPERATING RESERVE COSTS DUE TO THE ONE-HOUR FORECAST IS MINIMAL ON THE DESC SYSTEM..." DO THE STATEMENTS MADE BY WITNESS HANZLIK AND WITNESS BELL SUPPORT DESC'S PROPOSED VIC?

A. No, the statements do not. The statements might be factually correct; however, they are not indicative of the way DESC calculated the VIC. DESC states that "even with these hour-ahead forecasts, DESC must plan Operating Reserves a **day ahead** for the next day's peak, not an hour ahead, which means these hour-ahead forecasts would be useless in planning for the next day's Operating Reserves." (Hanzlik Rebuttal, p. 25) [emphasis added].

Witness Hanzlik's statement that planning Operating Reserves are set the day prior to the need is incomplete because it does not recognize that different generating resources have different timescales over which they can respond (e.g.: multi-hour versus 15-minute ramp up times, as well as limitations on how long a unit must remain in operation once dispatched, or must remain shut down before restarting). The fact that some baseload units need to be dispatched the day prior, does not mean that other resources cannot be

dispatched within the day, hour, or even a shorter time span. Better forecast information from a 1-hour ahead versus 4-hour ahead forecast would certainly not affect a baseload unit with long startup and ramp times but could affect the dispatch of other more responsive generators. Indeed, it is the cost impacts on flexible generators such as a Combined Cycle that was specifically identified by the Company as increasing system operating costs. (David Direct, p. 14).

As for the statement by Witness Bell that 1-hour ahead forecasts would have minimal impact on the DESC system, this statement seems to contradict the DESC Study used to calculate the VIC. Witness David explicitly states:

> Ideally, the Study would rely on the difference between **1-hour ahead** advance schedules and actual operations to estimate the marginal need for Operating Reserves created by solar resources; however, that data is unavailable. The 4-hour ahead advance schedule provides the best available proxy for a shorter-term advance schedule, and the Study mitigates the potential for overstating the necessary adjustment to the Operating Reserve requirement by eliminating the 10% of intervals with the highest observed increase in Operating Reserve requirements in each month. (David Direct, pp. 9-10) [emphasis added].

The DESC Study authors are clearly of the opinion that 1-hour ahead forecasts are "ideal" for the purpose of estimating solar integration costs, and that the use of the 4-hour ahead forecasts have the potential to overstate the need for additional operating reserves. To their credit, the Study authors do attempt to address the overestimation through the elimination of 10% of the intervals, but there is no quantification of how this adjustment moves the Study results close to the 1-hour ahead ideal.

It could be the case that both Witness Bell and the DESC Study are correct. Perhaps the 1-hour forecast is ideal, but the impact of the 1-hour ahead versus 4-hour ahead forecast would be minimal. If this is the case, however, it calls into question the Company's

elimination of 10% of the intervals, as that adjustment may contribute to an underestimate of the VIC costs. This further supports ORS's recommendation for an independent study and continuation of the true-up provisions of the current VIC.

Q. WITNESS HANZLIK'S REBUTTAL (PAGES 14-25) PROVIDES A DETAILED PRESENTATION ON THE VARIABILITY OF SOLAR OUTPUT. HE THEN STATES ON PAGE 25, "THE ACCURACY OR THE TIMEFRAME OF THE FORECASTS CANNOT ELIMINATE THE NEED FOR OPERATING RESERVES GIVEN THAT THE VARIABILITY OF SOLAR REMAINS IN ALL SCENARIOS." DOES MR. HANZLIK PROVE THE INCREASED ACCURACY OF A 1-HOUR AHEAD FORECAST IN THE DESC STUDY WOULD BE IRRELEVANT?

A. No. It is important to keep in mind that the variability of solar can be deconstructed into two (2) components. There is (1) the forecast or scheduled variation (for example, the reduction in solar as the sun goes down in the evening), and then there is (2) the unexpected variation that is the difference between scheduled and actual generation. As explained on page 5 of the DESC Study, Operating Reserves are the "capability of the electric system to quickly increase generation in the event of **mismatch between scheduled and actual generation** or load caused by unexpected drops in generation or increases in load." [emphasis added].

DESC is correct that the total variability (the combined effect of forecast and unexpected variation) does not change with better forecasts. However, better forecasts do reduce the second component of variability, the unexpected variation --- and it is that unexpected variation that is the focus of the DESC Study. To be clear, Witness Hanzlik's statement is factually correct, but not applicable to the issue of forecast accuracy and the

cost of solar integration. A more accurate 1-hour ahead forecast would reduce the unexpected variation of solar generation and thereby reduce the costs of solar integration compared to the costs resulting from the use of a 4-hour ahead forecast.

Q. IS DESC WILLING TO ACCEPT ORS'S RECOMMENDATION TO MAINTAIN THE CURRENT ESTABLISHED VIC SUBJECT TO FUTURE TRUE UP IN ACCORDANCE WITH COMMISSION ORDER NO. 2020-244?

A. Yes. Company witness Kassis in his rebuttal testimony (page 7, lines 2-4) asserts that the Company is "willing to accept Witness Horii's proposal that the VIC remain at $0.96/MWh on an interim basis, so long as the VIC remains subject to a future true up."

Q. WITNESS NEELY'S REBUTTAL (PAGE 3) PROVIDES THREE (3) REASONS WHY THE AVOIDED CAPACITY COST SHOULD CONTINUE TO REFLECT A 100 MW CAPACITY CHANGE INSTEAD OF MATCHING THE SIZE OF THE NEW COMBUSTION TURBINE. ARE WITNESS NEELY'S REASONS COMPELLING?

A. No. It is important to recall that this Commission required the Company to use the assumed size of a new generating unit in its analysis of avoided capacity costs in Commission Order No. 2019-847. (Commission Order No. 2019-847, p. 24). With that said, I address each of Witness Neely's reasons separately.

Reason 1: A 100 MW change is consistent with the calculation of the avoided energy costs.

Response: Avoided energy and capacity costs are based on completely independent models. One model looks at short term operating costs and the other model looks at long-run capital costs for plant additions. Moreover, the avoided

energy costs for solar do not use a 100 MW change for all hours, but instead use a solar profile with MW impacts that vary hourly. Lastly, I am unaware of any Public Utility Regulatory Policies Act of 1978 ("PURPA") requirement that the same MW change be used for each model.

Reason 2: The MW change should be reflective of the number of Qualifying Facilities ("QF") expected over the next two (2) years.

Response: Witness Neeley states that it is reasonable to expect several hundred MWs of QFs over the next two (2) years (Neely Rebuttal, p. 3). To be sure, 100 MW is closer to "several hundred MWs" than 66 MW. However, 100 MW is so far away from "several hundred MWs" that it would be a stretch to deem it "reflective" of what is expected over the next two (2) years, and certainly not a justification for ignoring the Commission's ruling in Order No. 2019-847.

Reason 3: PURPA specifically provides that a utility can use up to 100 MWs to calculate avoided costs.

Response: PURPA allows an increment **up to** 100 MWs but does not mandate that 100 MWs is the only value that can be used. 66 MWs equally meets the PURPA specification.

Q. DOES DESC OPPOSE YOUR RECOMMENDED MODIFICATION TO THE TOU PERIODS FOR NON-SOLAR GENERATORS ON THE PR-1 RATE?

A. No. Company Witness Bell on pages 19-20 of his rebuttal testimony states that DESC does not oppose my recommendation to shift the summer hours of 11:00 am to 2:00 pm from the summer peak period to the summer off-peak period.

Q. WILL YOU UPDATE YOUR SURREBUTTAL TESTIMONY BASED ON INFORMATION THAT BECOMES AVAILABLE?

A. Yes. ORS fully reserves the right to revise its recommendations via supplemental testimony should new information not previously provided by the Company, or other sources, becomes available.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.